Baton Rouge Community College

Academic Affairs Master Syllabus

Date Approved or Revised: July 22, 2008

Course Name: Plane Trigonometry
Course Number: MATH 111

Lecture Hrs. 3 **Lab Hrs. 0** **Credit Hrs. 3**

Course Description: Plane Trigonometry includes the study of trigonometric functions and identities, inverse trigonometric functions, graphs, solving triangles and equations, complex numbers, vectors and polar coordinates.

Prerequisites: MATH 101 or MATH 110 with an "C' or better
Co-requisites: None

Calculator Highly Recommended: TI83 or TI84 or Scientific

Suggested Enrollment Cap: 30

Learning Outcomes: Upon successful completion of this course, the student will be able to:

- Convert angles from degrees to radians and from radians to degrees;
- Correlate radius, arc length, angle measure, and quadrant and solve associated problems;
- Have a working knowledge of the definitions of the six basic trigonometric functions and their inverse functions;
- Apply reference angles and reference triangles to find function values of special angles and special values;
- Illustrate the graphs of the six basic trigonometric functions and their inverses, as well as transformations of these graphs involving vertical and horizontal shifts and changes in period and amplitude;
- Write and solve problems involving the application of transformations of the six basic trigonometric functions and their inverses;
- Verify identities and solve trigonometric equations using trigonometric identities;
- Solve triangles and geometric vector problems using the Laws of Sines and the Law of Cosines;
- Apply the rules and definition of algebraic vectors to vector problems; and
- Convert rectangular coordinates to and from polar coordinates and sketch a graph in polar coordinates.

General Education Learning Outcomes: This course supports the development of competency in the following areas. Students will:

- Think critically, collect evidence (statistics, examples, testimony) and make decisions based on the evidence, comprehend and analyze texts, and solve problems using methods of critical and scientific inquiry; and
- Organize, analyze, and develop useful information useful by employing mathematical principles.

Assessment Measures:

- A comprehensive final exam; and
- Instructor created exams and or homework.

Information to be included on the Instructors' Course Syllabi:

- ***Disability Statement*:** Baton Rouge Community College seeks to meet the needs of its students in many ways. See the Office of Disability Services to receive suggestions for disability statements that should be included in each syllabus.

- ***Grading:*** The College grading policy should be included in the course syllabus. Any special practices should also go here. This should include the instructor's and/or the department's policy for make-up work. For example in a speech course, "Speeches not given on due date will receive no grade higher than a sixty" or "Make-up work will not be accepted after the last day of class."

- ***Attendance Policy*:** Include the overall attendance policy of the college. Instructors may want to add additional information in individual syllabi to meet the needs of their courses.

- ***General Policies*:** Instructors' policy on the use of things such as beepers and cell phones and/or hand held programmable calculators should be covered in this section.

- ***Cheating and Plagiarism*:** This must be included in all syllabi and should include the penalties for incidents in a given class. Students should have a clear idea of what constitutes cheating in a given course.

- ***Safety Concerns:*** In some programs this may be a major issue. For example, "No student will be allowed in the safety lab without safety glasses." General statements such as, "Items that may be harmful to one's self or others should not be brought to class."

- ***Library/ Learning Resources:*** Since the development of the total person is part of our mission, assignments in the library and/or the Learning Resources Center should be included to assist students in enhancing skills and in using resources. Students should be encouraged to use the library for reading enjoyment as part of lifelong learning.

Expanded Course Outline:

I. Trigonometric Functions
   - A. Angles and Their Measures
   - B. Acute Angle Domains
   - C. General Angle and Real Number Domains
   - D. Exact Values for Special Angles and Real Numbers
   - E. Circular Functions
   - F. Graphing Basic Trigonometric Functions
   - G. Graphing $y = k + A \sin(Bx + C)$ and $y = k + A \cos(Bx + C)$
   - H. Graphing More General Tangent, Cotangent, Secant, and Cosecant Functions
   - I. Inverse Trigonometric

II. Trigonometric Identities and Conditional Equations
   - A. Basic Identities and Their Use
   - B. Sum, Difference, Cofunction Identities
   - C. Double-Angle and Half-Angle Identities
   - D. Product-Sum and Sum-Product Identities
   - E. Trigonometric Equations

III. Additional Topics in Trigonometry
   - A. Law of Sines
   - B. Law of Cosines
   - C. Geometric Vectors
   - D. Algebraic Vectors
   - E. Polar Coordinates and Graphs
   - F. Complex Numbers in Rectangular and Polar Forms
   - G. De Moivre's Theorem